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INDEX

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LIBRARY OF CONGRESS 0 029 767 361 0	1891	12	T173. S88 no. 1-12 (1965-72)
LIBRARY OF CONGRESS 0 029 767 362 2	1892	18	T173. S88 – T469
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LIBRARY OF CONGRESS 0 029 767 364 6	1894 1 box	7	T805 – T948
	1895	12	TA1. A28 – TA 117. A3
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INDEX

Page: 2

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LIBRARY OF CONGRESS 0 029 767 368 3	1898 1 BOX	9	TA459– TA684
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THE COMPANIES ACT, 1948

Memorandum and Articles of Association and By-Laws

OF

THE INSTITUTION OF SANITARY ENGINEERS

(REPRINTED, JUNE, 1934.
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REVISED, AS SHOWN IN HEAVY TYPE
NOVEMBER, 1949 AND PRINTED
MARCH, 1950.)

2,500/3/50 LOVE AND MALCOMSON, LTD., REDHILL

REPORT

on

THE WATER RESOURCES OF CHARLEVOIX COUNTY

Submitted to

DIRECTOR OF LAND ECONOMIC
SURVEY

for the

DEPARTMENT OF CONSERVATION

LANSING, MICHIGAN.

by

C.C. Wislor

June 1, 1923

GENERAL STATEMENT ACCOMPANYING ALL REPORTS ON WATER RESOURCES MADE AS A RESULT OF THE SURVEY NOW BEING CONDUCTED IN CONJUNCTION WITH THE LAND ECONOMIC SURVEY

DEPARTMENT

OF

CONSERVATION

Respectfully submitted to

THE DEPARTMENT OF CONSERVATION

LANSING, MICHIGAN

By

C. O. Wisler

June 1, 1923

REPORT

ON

THE WATER RESOURCES OF OGEMAW COUNTY, MICHIGAN

Submitted to

DIRECTOR
of
LAND ECONOMIC SURVEY

for the

DEPARTMENT OF CONSERVATION

LANSING, MICHIGAN

by

C. O. WISLER

June 1, 1924

REPORT

on

THE WATER RESOURCES OF ANTRIM COUNTY

Submitted to

H. J. Andrews

Director, Land Economic Survey

for the

DEPARTMENT OF CONSERVATION

LANSING, MICHIGAN

by

C. O. Wisler

June 1, 1924

REPORT

on

THE WATER RESOURCES OF THE THUNDER BAY RIVER BASIN
ALPENA COUNTY

Submitted to
H.J. Andrews
Director, Land Economic Survey

for

DEPARTMENT OF CONSERVATION
LANSING, MICHIGAN

by

C.O. Wisler
June 1,1925

REPORT

on

THE WATER RESOURCES OF THE CEDAR RIVER

in

MENOMINEE COUNTY

Submitted to

Mr. H.J. Andrews

Director of the Land Economic Survey

for

THE DEPARTMENT OF CONSERVATION

Lansing, Michigan.

by

C.O. Wisler

March 1926

REPORT

on

THE WATER RESOURCES OF THE MONTMORENCY RIVER

in

MONTMORENCY COUNTY

Submitted to

Mr. L. J. Andrews

Director of the Land Economic Survey

for

THE DEPARTMENT OF CONSERVATION

Lansing, Michigan

by

C. O. Wisler

March 1926

REPORT

ON

THE WATER RESOURCES OF THE DAN RIVER

IN

CHEROKEE AND BLACKBURN SCHOOLS

WITH

SPECIAL

REFERENCE

TO THE

DEVELOPMENT AND POWER WATER POWER

IN

CHEROKEE AND BLACKBURN SCHOOLS

and

THE POWER SITE

in

CHEROKEE COUNTY

Submitted to

Dr. [illegible] Schoenmann

Director of the [illegible]

for

THE DEPARTMENT OF CONSERVATION

by

C.C. Wheeler

[illegible], 1917.

REPORT

on

THE WATER RESOURCES OF THE MUNUSKONG AND WAISKA RIVERS IN CHIPPEWA COUNTY

with

SUMMARIES

of the

DEVELOPED AND UNDEVELOPED WATER POWER

in

CHIPPEWA, LUCE AND MACKINAC COUNTIES

and

THE POWER MARKET

in

CHIPPEWA COUNTY

Submitted to

Mr. L.R. Schoenmann

Director of the Land Economic Survey

for

THE DEPARTMENT OF CONSERVATION

by

C.C. Kisler

May, 1927.

REPORT
ON
THE WATER RESOURCES OF THE MANISTEE RIVER
ABOVE SHERMAN

Respectfully Submitted to
Mr. L. R. Schoenmann, Director
Land Economic Survey
for
The Department of Conservation
Lansing, Michigan
by
C. O. Wisler

June, 1928

Antrim, Kalkaska, Missaukee, Grand Traverse
and Wexford Counties

REPORT

on

THE WATER RESOURCES OF ALGER COUNTY

Respectfully Submitted to

MR. L. R. SCHOENMANN

DIRECTOR OF THE LAND ECONOMIC SURVEY

for

THE DEPARTMENT OF CONSERVATION

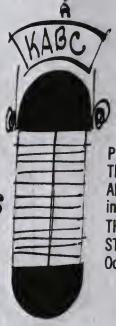
Lansing, Michigan

by

C. O. Wisler,

May 1929

THE SMOG STORY



a weekly radio series

Presented by
THE LOS ANGELES COUNTY
AIR POLLUTION CONTROL DISTRICT
in conjunction with
THE AMERICAN BROADCASTING COMPANY
STATION KABC
October 15 to December 10, 1955

SOUTHERN CALIFORNIA CONFERENCE
ON THE
ELIMINATION OF AIR POLLUTION

Ambassador Hotel, Los Angeles
November 10, 1955

Summation by Dr. Lee A. DuBridge

Mr. Mullendore, ladies, and gentlemen: My task today is a most difficult one. All of the papers you have heard have themselves been summaries of rather extensive work and of difficult problems. To give a summary of a group of summaries is going to be difficult indeed. If any of you would like to have my job, I would be glad to trade places with you at this moment.

We heard some remarks about miracles just a few minutes ago. Miracles are going to be accomplished in the next fifty years, but I think we need to pause and reflect that if these miracles occur, they will occur only when we get the facts first. Somebody has to make a discovery, get a new idea. Only on the basis of new ideas do miracles transpire. Part of the problem we have been discussing today concerns the new ideas and the new facts on the basis of which one can build the miracle of the solution to the Los Angeles smog problem.

I've thought often that one of the most unfortunate circumstances about our Los Angeles air pollution is the fact that we call it "smog". The term "smog" I think originated in certain midwestern and eastern cities some twenty or thirty years ago where, on damp, foggy days, a soft coal smoke settled over the city blacking out the sun and literally turning day into night. And I can testify from personal experience it also turned white shirts into black ones. Those black, sulfurous clouds that I have personally lived through, and many of you have too, really were a mixture of coal smoke and fog. So the name "smog" was appropriate.

The cure for that kind of smog, while not easy, was relatively obvious. Simply stop the coal smoke -- that is, stop burning soft coal or install smoke eliminators that

SOURCE MATERIALS

ON AIR POLLUTION CONTROL

FOR THE SCHOOLS AND COLLEGES OF LOS ANGELES COUNTY

AIR POLLUTION CONTROL DISTRICT · COUNTY OF LOS ANGELES

AIR POLLUTION CONTROL DISTRICT
434 South San Pedro Street
Los Angeles 13, California
Madison 9-4711

NOTE TO EDITORS:

In view of the importance of the automobile exhaust problem the attached documents are submitted for release, Monday, September 24, 1956.

S. Smith Griswold
Air Pollution Control Officer

S-3

ON THE OTHER HAND, there may be something to it.

For many months now the people of Los Angeles County have been looking to the automotive industry for a change—or better, an improvement—that would fall into none of these catagories: a device which will eliminate the problem of automobile exhaust as a contributor to smog.

That change will not make automobiles more saleable, cheaper, or more reliable. It will only make them more bearable to those who must breathe their exhalation.

WE HERE BELIEVE that this is not a problem which is exclusive to our county. We have put it to Detroit that this is not merely a phenomenon of Los Angeles, or of Southern California, but is rather attribute inherent in the automobile itself.

As a problem of the automobile, it is even more a problem for the industry than it is for us.

THE RESPONSE FROM THE INDUSTRY has been a general agreement to this premise, and the launching of a program to develop an air pollution control for the automobile exhaust.

Many months ago the Automobile Manufacturers Association formed a committee to study the problem. The manufacturers agreed that their efforts would be pooled, that the device would be placed on the public welfare basis of the sealed beam headlight project, and that we could look for an effective device on the 1958 models, which will be out in 1957.

Now we are approaching the season for announcements of the 1957 models. A year hence, according to the schedule of the AMA, the device is to be in production. To be in production a year from now, the device already should have left the drafting tables; but, as of this moment, if the automobile industry has such a device, it has not been made known to the people of this county.

IT IS OUR FEELING that the industry, which has produced so many significant engineering advances in its product, is capable of finding and producing the means of control of exhaust fumes—*if it is willing to turn to that end a small portion of the money and manpower that goes into making automobiles more fashionable.*

We are beginning to wonder, though, whether the automobile industry considers a matter as unprofitable as the public welfare to be worth this effort and expense.

SMITH GRISWOLD
Air Pollution Control Officer

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on the smog problem.

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EMENT . . . . . INFORMATION

TECHNIQUES OF TESTING FOR AIR CONTAMINANTS FROM COMBUSTION SOURCES

By

Carl V. Kanter, Robert G. Lunche, and Albert P. Fudurich

ABSTRACT

The organization of the Source Testing Section in the Research Division of the Air Pollution Control District is described. The procedures used in initiating a test request, making arrangements for conducting the test, and selecting the proper sampling location are given.

Methods used in testing combustion sources such as incinerators and boilers are discussed, including measurements of stack gas velocities, and collection and analysis of particulate and gaseous contaminants.

Calculations involved in the test procedures are given, with illustrations using typical test data.

Results of tests and analyses of combustion sources are tabulated to show the relationship between materials burned, burning rates and emission of contaminants.

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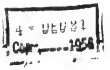


LOS ANGELES COUNTY

AIR POLLUTION CONTROL DISTRICT

Testimony

of

S. Smith Griswold, Air Pollution Control Officer

Dr. Leslie A. Chambers, Director of Research

and

Hoyt R. Crabaugh, Director of Engineering

before

The Select Committee on Small Businesses

of the House of Representatives

at Los Angeles, Calif.,

May 18 and 19, 1956

THE AIR POLLUTION PROBLEM

by L. A. DuBRIDGE
President, California Institute of Technology

Some plain words about smog—what it is, where it comes from, who's to blame and what we can do about it—by the new chairman of the Board of the Air Pollution Foundation

ONE OF OUR BIGGEST HANDICAPS in the fight for clean air in Los Angeles has been the fact that our air pollution is called "smog." The term "smog" originated in certain midwestern and eastern cities where —twenty years or more ago—on damp, foggy winter days a black pall of soft-coal smoke settled over the city, blanking out the sun and literally turning day into night. Those black, sulfurous clouds were a mixture of coal smoke and fog, and the name "smog" was a natural one.

The cure for that kind of smog, although it was not easy, was obvious—namely, stop the smoke! That is, stop burning soft coal or else put in smoke eliminators. And so in St. Louis, Pittsburgh and other cities the factories put in eliminators and better combustion controls; the apartment houses and private homes switched from soft coal to hard coal or to oil or gas. And presto! The smog stopped!

But Los Angeles begins where Pittsburgh and St. Louis left off. We have not burned soft coal here for fifty years. Our worst smoggy days are like bright, clear sunshine compared to a good old-fashioned St. Louis smog. Even today there is plenty of air pollution in every major city in the nation.

The Los Angeles air pollution problem is more serious than some, not because we are "dirtier" than other cities, but only because Mother Nature, in providing us such a nice climate, failed to provide southern California with adequate ventilation. Hence, we must be much cleaner than anyone else needs to be.

Because old-fashioned eastern smog was largely caused by one thing—namely, soft coal—we in the West also, at first, looked for a simple single cause for our trouble. In 1942-45 everyone was sure that the wartime synthetic rubber plants were the major culprit. Possibly, then, they were. But by 1945 they were cleaned up or shut down, yet the air pollution persisted. Then we went after sulfur. Expensive equipment was built to remove sulfur from the stack gases of refineries and other industrial plants. This too was probably a good thing to do, but the pollution problem persisted. Nor did the elimination of many of the principal sources of

Reprinted from Engineering and Science Monthly, December 1955.
Published at the California Institute of Technology.

WHAT IS BEING DONE ABOUT SMOG

A REPORT TO THE PEOPLE

AIR POLLUTION CONTROL DISTRICT • COUNTY OF LOS ANGELES • 434 South San Pedro • Los Angeles 13, California • MAdison 9-4711

Late in December of last year a number of steps were inaugurated which have led to the complete reorganization of the Los Angeles County Air Pollution Control District, and to the adoption, modification, or enlargement of key programs designed to curb the problem of atmospheric pollution in the Los Angeles Basin.

These steps were taken on the assumption that the community must be provided with an organization fully capable of translating its collective wants into the effective action that is possible only through complete use of the specialized skills and knowledges of the chemist, the engineer, the researcher, the meteorologist, and the law enforcement officer. It was to this task of forging an effective instrument of community self-interest that the reorganization efforts were directed. This goal has now been successfully accomplished.

These efforts have been undertaken under the stimulus of the compelling realization that now, more than ever before, bold and aggressive measures are required if we are ever to realize the complete conquest of smog.

OUR LIMITED AIR SUPPLY

It is with some measure of disbelief that most of us come to the awful realization that here in Los Angeles our traditionally abundant supply of clean, fresh air no longer exists -- and that very real limitations must be placed on the use of a natural resource once considered inexhaustible.

Though we live surrounded by a sea of air more than 200 miles deep, our living zone is confined to but the narrow layer of its lower few feet.

Under ordinary conditions, the flow of currents and eddies continually replenishes man's living zone and carries off the waste products to be diluted in the giant reservoir of the sky. When conditions are not ordinary -- when human activities become concentrated and accelerated, or the climate and geography restrict the flowing of currents -- this replenishment slows, or ceases. Then waste products accrue rapidly.

So it is in Los Angeles, where we have come to realize the agonizing first symptoms of drowning in our own wastes.

In the Los Angeles Basin our climate and geography have imposed a real and observable restriction on our natural air supply. The temperature inversion, a layer of warm air over cooler air, has ceased to become a roof keeping out the inclemencies of weather and has now become a ceiling, clamped down tightly on a crowded room and forcing our air-borne waste products back into our living zone. And our winds, the weakest and most variable found in any major metropolitan area, lack the velocity to provide rapid evacuation of these contaminants from the Basin. They serve instead to accumulate and concentrate

UNIQUE APPLICATIONS OF AIR POLLUTION CONTROL DEVICES[1]

John L. Mills[2]
Leo E. Kallan[3]
Eric E. Lemke[4]
Robert J. MacKnight[5]

The control of air pollution has been kept at high efficiency in Los Angeles County, and at the same time the cost of complying with air pollution control regulations has been reduced in a number of instances by the ingenious application of known principles. As a result, there are a number of installations which can be classed as unique. Four of these will be discussed. The installations include a portable multiple chamber incinerator used by a building contractor, a wet multiple cyclone used to control dust from an asphaltic concrete batching plant, a fume collection system for the mold pouring floor at a brass foundry and a low voltage electrostatic precipitator used to control oil mists from an asphalt roofing paper manufacturing plant. Each installation will be described separately.

A PORTABLE MULTIPLE CHAMBER INCINERATOR

A portable multiple chamber incinerator built recently in Los Angeles has been found to be a practical solution to a difficult trash disposal problem. Open burning on job sites has been the usual method of rubbish disposal in tract home development. In spite of the frequency of excessive smoke, past efforts of contractors to control air pollution have usually been directed toward reducing rubbish pile sizes, improving the methods of lighting fires and supervising the burning operations closely.

Orange orchards are frequently torn out in Los Angeles to make room for tracts of homes. The uprooted trees are of little value and constitute a large source of combustible refuse. In addition, during the building of one house, there is produced a pile of waste wood, tar, tar paper, cardboard and other combustibles amounting to from 700 to 1000 pounds. Since individual tracts frequently contain 200 to 400 or more houses, the total amount of rubbish to be disposed of becomes a considerable item,

1. Presentated at the Annual Meeting of the Air Pollution Control Association in Buffalo, New York, May 1956
2. John L. Mills, Principal Engineer — Air Pollution Control
3. Leo E. Kallan, Senior Engineer — District, County of
4. Eric E. Lemke, Senior Engineer — Los Angeles
5. Robert J. MacKnight, Senior Engineer

····WAR ON SMOG REPORT····

A DISCUSSION OF THE SMOG PROBLEM

Reprinted from

THE LOS ANGELES HERALD-EXPRESS

AIR FLOW STUDIES OF DAYS OF HEAVY SMOG IN LOS ANGELES

by

R.G. Holmes, E.K. Kauper, A.B. Street, J.R. Taylor

Abstract

Air paths associated with heavy pollution concentrations in the Los Angeles area have been traced by means of wind reports from a network of 64 stations in the Los Angeles Basin. Trajectories have been constructed for heavy smog situations from 1952 to 1955, showing the routes taken by air parcels from the time they crossed the coast-line until they arrived at an air sampling station, loaded with pollution. These air paths are summarized according to the area of the Basin involved as a source region of the pollution. In addition, the months of August 1952 and 1953 were similarly studied. In these cases, all days were involved, both smoggy and clear. The results of this study are compared with those of the selected smoggy days. To check on whether the air flow as pictured by the surface wind reports represented the actual flow of the pollution, two methods were used: (1) measurement of the wind above the surface by means of slow ascent pilot balloons, (2) fluorescent tracer tests. These studies have indicated the usefulness of the trajectories derived from the surface wind reports.

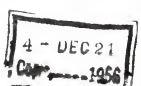
AIR MONITORING OF THE LOS ANGELES ATMOSPHERE WITH AUTOMATIC INSTRUMENTS

J. Cyril Romanovsky, James R. Taylor, Robert D. MacPhee

and Janet E. Dickinson

ABSTRACT

Air monitoring of the Los Angeles Basin for atmospheric pollutants is being conducted at 15 stations covering an area of 1,000 square miles. The program provides data for the District's alert system, for the zoning of industry, for research into the many chemical reactions occurring in the air, and finally it gives a measure of the yearly progress in the fight against smog. The several automatic instruments used for this purpose are described in this paper, together with comments on their accuracy and a description of maintenance problems.



... motors, the refiners are turning to new chemical processes and pouring more than a billion dollars into new plants like the one at the left.

When you drive up to a modern service station today, chances are you can buy a premium grade fuel that rates close to 100 octane. That's a gasoline roughly comparable to aircraft fuel But because of the high-powered automobile engines coming out of Detroit, 100 octane is no longer strictly for the birdmen. A good many of the cars on the road a few years from now may not be able to run without it.

I. The Spur

Many car engines being made today are high compression jobs rated at 200 horsepower and higher. That means they squeeze the mixture of gasoline and air in their cylinders to ⅛ or ⅑ its normal volume before it is exploded to produce power. These compression ratios come close to equaling those in aircraft powerplants. They compare with compressions of 5-to-1 and 6-to-1 on automobiles only a couple of years older (chart). And, to push engine efficiency higher, compression ratios will keep climbing—perhaps as high as 12-to-1 or 14-to-1.

It is these higher compression ratios that make higher octane gasoline a necessity. Each boost in the ratio requires a better performing gasoline. So the refiners are going to have to hit the market with higher quality fuel before the hot engines hit the road. And the fuel market is a big one—last year motorists and truck operators spent over $12-billion for fuel.

• **Difficulty**—The octane race poses this problem for the gasoline makers: How to produce a greater proportion of high octane fuel from a given amount of crude oil without breaking through the roof on costs. When you get up in the high octane ranges, it is an expensive proposition to push the rating up. A recent survey by Ethyl Corp. showed that the average premium gasoline sold in the U. S. in June was 97 octane; for regular, it was 90. At this high level, processing costs may rise as much as 12¢ to 15¢ per barrel to raise the octane a single point.

The refiners are turning to new chemical processes and expensive equipment to lick this problem. The latest octane-boosting process to get into production is Esso's Powerforming unit pictured at the left. The Linden (N. J.) plant will process 20,000 barrels of gasoline a day. It's part of Esso's $60-million investment program centered on the new process.

But that's only a small part of the octane-boosting program of the oil industry. To meet market demand for higher octanes that's expected to develop by 1965, the industry will lay out an estimated $1.5-billion for gasoline plants.

• **Market Flurry**—Already high octane gasolines from new refining processes are causing a marketing flurry (BW—Mar.3'56,p32). Sun Oil is test marketing a special dispensing system that lets you dial one of five grades of gasoline. And Esso service stations recently blossomed with a gilded third pump in their line-up. The new pump spews Golden Esso Extra—100-plus octane gas intended for cars with compression ratios that range upward from 9-to-1. At mid-June, Esso reported that its golden gas was accounting for 22% of sales volume at selected test stations that were the first to get the gilded pumps.

Other gasoline makers, such as Sinclair, are hesitant about introducing a third grade of fuel, prefer to boost the octane of their present premium and regular grades of gas.

II. Basic Chemistry

To understand what's involved in producing higher octane gasolines, you have to know a little bit about the chemistry of gasoline. All gasolines are blends of a variety of hydrogen and carbon compounds processed from crude oils.

About 97% of gasolines sold contain tetraethyl lead, which can boost the octane by 10 points. Other additives, such as tricresyl phosphate (Shell TCP), are sometimes mixed in to dis-

... would have an octane rating of 100. Such a fuel can be produced, but it's not feasible to do it on a large-scale, mostly because of the high cost. Refiners, however, use this pure fuel as a standard for measuring the performance of other blends. The octane number scale rates other fuels according to anti-knock qualities. The more a fuel resists uneven burning, premature ignition, or too rapid burning, the higher its octane number.

Strictly speaking, octane can't go above 100. But since the standard was set up, newer fuels have been developed that go way beyond 100% iso-octane in performance. For this reason, some refiners think it's time to rejigger the rating system.

• **New Blends**—But today's fuels with an octane rating near 100 are a far cry, in chemical structure, from the standard test fuel. They are a blend of hydrocarbons of various weights and configurations that have been torn apart, reshaped and put together again by some of the most complex chemical processing operations used in industry.

When you get crude from the wells, it's a thick black soup made up of thousands of different chemical compounds. And the compositions of crudes differ widely in their content of gasoline range materials. Some contain large amounts of impurities that poison or corrode processing equipment. These must go through purification processes before they are distilled into the fractions that begin to resemble final products such as gasoline and fuel oil.

• **Distillation**—The basic step in any refining process is distillation, which amounts to boiling off different hydrocarbons in the crude mix. When you heat a batch of crude, the first products to boil off are the so-called light ends, such as methane, ethane, and butane (some of which are gascous at normal temperature and pressure).

As the temperature of the crude goes up, the next products to boil off are the straight-run gasolines or virgin naphthas. These usually have an octane rating between 40 and 60. They were fine for the Model T, but don't rate high enough for modern engines.

After the gasolines, the kerosene-

BASIC DATA ON AIR POLLUTION CONTROL IN LOS ANGELES COUNTY

Martin A. Brower
Editor

February 1, 1956

Public Information and Education Division
Air Pollution Control District, County of Los Angeles
434 So. San Pedro Street, Los Angeles 13, California

AIR CONTAMINANTS AS FACTORS IN INDUSTRIAL LAND USE PLANNING AND ZONING

by
Arthur A. Atkisson, Jr.
Public Services Officer
Los Angeles County Air Pollution Control District

before the
American Institute of Planners,
Northern California Section

July 21, 1956
at San Jose, California

INTRODUCTION:

There are many types and kinds of air pollution problems.

From a quantitative point of view, these may be considered as ranging from mere nuisance problems involving highly local areas, to the mass contamination of air supplies for whole metropolitan areas.

From a qualitative standpoint these pollution problems may range from a single adverse affect from a single contaminant -- such as the coal smoke or soot problems of Pittsburgh and St. Louis -- to a combination of effects resulting from the interaction of many kinds of contaminants -- as in Los Angeles.

Traditionally, the solutions to these problems, however simple or complex they may be, have involved the following elements:

1. The identification of the contaminants causing the difficulty.
2. The identification of the sources from which they are derived.
3. The establishment of reasonable standards designed to lessen the outflow of the contaminants from their sources -- and thus lessen or eliminate the concentrations found in the atmosphere.

THE OPERATION AND USE OF THE TITRILOG AND AUTOMETER

By

Janet E. Dickinson

ABSTRACT

The purpose of this presentation is to describe the operation and uses of the two most commonly employed automatic instruments now available for the measurement of sulfur dioxide. These are Consolidated Engineering Corporation's Titrilog and the Autometer, developed by M. D. Thomas and associates, and manufactured by Leeds and Northrup Company. The operating principles of each instrument are outlined briefly; some of the advantages and disadvantages of each are discussed; a few of the difficulties which may be encountered in normal operation of each are described; and suggestions offered for the most effective use of each instrument.

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THE SANITATION MANUAL

A GUIDE FOR MANAGEMENT

NEW YORK STATE RESTAURANT ASSOCIATION INC.